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Legal Department, DL429
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P. O. Box 7599
Loveland, Colorado 80537-0599

PATENT APPLICATION

ATTORNEY DOCKET NO. 10961260-2

#22
8-19-02
Payton

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Date of Facsimile: August 6, 2002

Typed Name: Katherine Lopez Dangson

Signature: Katherine Lopez Dangson

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Anticipated Classification of this application:
Class_____ Subclass_____
Prior application:
Examiner: Owens, Douglas W.
Art Unit: 2811

Box CPA
COMMISSIONER FOR PATENTS
Washington, D.C. 20231

REQUEST FOR A CONTINUED PROSECUTION APPLICATION (CPA) 37 CFR 1.53(d)

Sir:

This is a request for a filing under the continuing application procedure, 37 CFR 1.53(d), for a
(X) continuation
( ) divisional

Prior Application

Application Serial No. 09/217,740 filed 12/21/98.

Title (as originally filed) Local Oxidation Of A Sidewall Sealed Shallow Trench For Providing Isolation Between Devices Of A Substrate

Title (as last amended) _____

Name of applicant(s) Min Cao, Paul J. Vande Voorde, Wayne M. Green Malahat Tavassoli

(X) The prior application is hereby abandoned.
(X) The issue fee in the prior application has not been paid.
(X) Please use all the contents of the prior application file wrapper, including the drawings and entered amendments, as the basic papers for the new application.

Foreign Priority - 35 USC 119

( ) Foreign priority under 35 U.S.C. 119 has been claimed in prior application Serial No. _____ filed on _____ in _____.
( ) The certified copy has been filed in prior application Serial No. _____ filed _____.
( ) A separate paper claiming direct priority to a foreign application is enclosed herewith. A certified copy of the foreign application will be provided in due course.

Petition for Extension of Time in Prior Application

(X) A petition for extension of time is enclosed herewith.

CONTINUED PROSECUTION APPLICATION
(CPA) (37 CFR 1.53(d)) (continued)

ATTORNEY DOCKET NO. 10961260-2

Assignment

(X) The prior application is assigned to Agilent Technologies Inc..
( ) The prior application is assigned to Agilent Technologies Inc. and _____.
( ) The prior application is assigned to _____.

Inventorship Statement

( ) Delete the following named individuals as inventors in this application in accordance with 37 CFR 1.62(a) as a result of a change in the claimed subject matter:

_____

Declaration and Power of Attorney

(X) The Power of Attorney in the prior application is to:

Customer Number 022878

Place Customer Number Bar Code Label here

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(X) The power appears in the original papers in the prior application.
( ) The power does not appear in the original papers, but was filed on _____.

( ) Recognize as Associate Attorney or Agent _____
Registration No. _____
( ) Authorization is hereby granted by signature below of the Attorney or Agent of record.
( ) The Associate Attorney or Agent may not have the authority to appoint other Attorneys or Agents.

Communications

(X) Address all future communications to:

AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, Colorado 80537-0599

Direct telephone calls to:
Judy Liao Shie
(408) 345-8920

Waiver of Secrecy

It is understood that secrecy under 35 USC 122 is hereby waived to the extent that if information or access is available to any one of the applications in the file wrapper of a CPA application, be it either this application or a prior application in the same file wrapper, the PTO may provide similar information or access to all the other applications in the same file wrapper.

Other Amendments

(X) Before calculating the filing fee, amend the prior application as follows:
( ) Cancel the following claims _____
( ) Enter the enclosed Preliminary Amendment.
(X) Enter the Amendment(s) under 37 CFR 1.116 dated June 19, 2002 that was unentered in the Prior Application. A copy of the Amendm nt(s) is (ar) enclosed.

CONTINUED PR SECUTION APPLICATION
(CPA) (37 CFR 1.53(d)) (c ntinued)

ATTORNEY DOCKET NO. 10961260-2

Fee Calculation

(X) The filing fee is calculated below for (X) Utility ( ) Design

CLAIMS AS FILED BY OTHER THAN A SMALL ENTITY				
(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) TOTALS
TOTAL CLAIMS	5 — 20	0	X $18	$ 0
INDEPENDENT CLAIMS	2 — 3	0	X $84	$ 0
ANY MULTIPLE DEPENDENT CLAIMS	0		$280	$ 0
			BASIC FEE: Design ($330.00); Utility ($740.00)	$ 740
			TOTAL FILING FEE	$ 740
EXTENSION FEE	1ST MONTH $110.00 [X]	2ND MONTH $400.00 [ ]	3RD MONTH $920.00 [ ]	4TH MONTH $1440.00 [ ]	$ 110
			TOTAL CHARGES TO DEPOSIT ACCOUNT	$ 850

Charge $ 850 to Deposit Account 50-1078. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 50-1078 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 50-1078 under 37 CFR 1.16, 1.17, 1.19, 1.20 and 1.21. A duplicate copy of this transmittal letter is enclosed.

Respectfully submitted,

Min Cao, et al.

By _____

Judy Liao Shie
Attorney/Agent for Applicant(s)
Reg. No. 50,305

Date: August 6, 2002

Telephone No.: (408) 345-8920

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Attor , Dock t # 10961260-2

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231.

Date of Deposit: June 19, 2002

Typed Name: Katherine Lopez Dlangson

Signature: Katherine Lopez Dlangson

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Cao, et al.
Serial No.: 09/217,740
Filing Date: 12/21/98
Examiner: Douglas Owens
Group Art Unit: 2811
Title: Local Oxidation of a Sidewall Sealed Shallow Trench for Providing Isolation Between Devices of a Substrate

Amendment

Dear Sir:

In a Final Office Action dated 22 April 2002, having a three-month statutory period expiring 22 July 2002, Applicants respectfully request reconsideration of the application in view of the following Amendments and Remarks. Please amend the specification as follows:

In the claims:

1. (Amended) A semiconductor isolation structure comprising:

a substrate, the substrate comprising a surface;

a first device and a second device formed within the substrate;

an isolation region formed within the substrate between the first device and the second device, the isolation region comprising:

a deep region which extends into the substrate, the deep region comprising a deep region cross-sectional area;

a single shallow region which extends to the surface of the substrate, the shallow region comprising:

a protective outer wall adjacent to the substrate;

an inner sealing wall located exclusively within the shallow region and adjacent to the protective outer wall: and

the shallow region having a shallow region cross-sectional area;

wherein the deep region cross-sectional area is greater the shallow region cross-sectional area.

5. (Amended) A semiconductor isolation structure comprising:

a substrate, the substrate comprising a surface;

a first device and a second device formed within the substrate;

an isolation region formed within the substrate between the first device and the second device, the isolation region comprising:

a deep region which extends into the substrate, the deep region comprising an oxide;

a single shallow region which extends to the surface of the substrate, the shallow region comprising:

a protective outer wall adjacent to the substrate,

an inner sealing wall located exclusively within the shallow region and adjacent to the protective outer wall.

A replacement copy of the claims is included following the Applicants' response.

EXAMINER'S REMARKS

Claims 1,2 and 4-6 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,685,198 to Kawakita, et al (hereinafter Kawakita).

SUMMARY OF APPLICANT'S INVENTION

The present invention is a semiconductor isolation structure separating two active devices. The isolation structure prevents undesired electrical connections and coupling between two devices. The isolation structure has a deep region and a single shallow region. The deep region has a wider cross-sectional area than the shallow region. The deep region includes an oxide, and the shallow region has a protective wall that can be formed from an oxide and a nitride.

CLAIM REJECTIONS - 35 U.S.C. §102(b)

Claims 1,2 and 4-6 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,685,198 to Kawakita, et al (hereinafter, Kawakita).

In all embodiments of Kawakita, the deep region oxide of an isolation structure is connected to the deep regions of adjacent isolation structures, so that one continuous deep region oxide layer **42** (Figure 2j) is formed. In effect, the deep region oxide layer is connected to an array of shallow regions **48** (Figure 2i). Deep region oxides that were separated from each other were a problem in prior art (column 4, lines 4-5). This was a problem solved by the Kawakita isolation structure (column 4, lines 15-16). Kawakita teaches connecting the deep region oxides into a single continuous layer (column 3, lines 61-63), and specifically teaches away from non-continuous deep regions of oxide.

In distinct contrast to the prior art, the deep region oxide of the present invention is not in contact with other deep regions, nor does it form a continuous deep region layer (Figure 3). This novel feature specifically goes against the teachings of Kawakita. Each deep region oxide of the present invention is connected to only one single shallow region (Figure 3) – not an array of shallow regions as taught by Kawakita. This novel feature

can be found in claims 1 and 5, which now recite a single shallow region per deep region of the isolation structure. Claims 1 and 5 are believed to be allowable based on the novel features cited within. Applicants respectfully submit that claims 1 and 5 are patentably distinct over the prior art.

Dependent claim 2 is believed to be allowable based on the allowability of claim 1. Furthermore, the shallow regions of the Kawakita isolation structure are filled with polycrystalline silicon films **48** (Figure 2i), while the shallow region of the present invention is filled with oxide **910** (Figure 9). Claim 2 recites that "the isolation region comprises an oxide." Therefore, claim 2 is also believed to be allowable based on the novel feature cited within.

Dependent claim 4 is believed to be allowable based on the allowability of claim 1. Dependent claim 6 is believed to be allowable based on the allowability of claim 5.

In summary, the claims are distinct and patentable over Kawakita, due to the above-mentioned novel features. The rejection under 35 U.S.C. §102(b) is believed to be overcome. Applicants respectfully request that the rejection be reconsidered and withdrawn.